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EXAMINER	
CHEN, QING	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/767,604	LIANG ET AL.	
	Examiner	Art Unit	
	Qing Chen	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-13 and 19-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-13 and 19-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is in response to the RCE filed on July 10, 2007.

2. **Claims 9-13 and 19-46** are pending.

3. **Claims 9, 11, 12, 20, 23, and 27-36** have been amended.

4. **Claims 1-8 and 14-18** have been cancelled.

5. **Claims 39-46** have been added.

Response to Amendment

Claim Objections

6. **Claim 32** is objected to because of the following informalities:

- **Claim 32** contains a typographical error: The comma (,) after the "data input to the first input from the personal computer" limitation should be changed to a semicolon (;). Applicant is advised to make the correction in order to keep the grammatical style consistent throughout the claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. **Claims 9-13** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 9-13 are directed to modems. However, the recited components of the modems appear to lack the necessary physical components (hardware) to constitute a machine or manufacture under § 101. Therefore, these claim limitations can be reasonably interpreted as computer program modules—software *per se*. Furthermore, Figure 1 and its corresponding description in the originally-filed specification provide no disclosure on the claimed elements "first input" and "second input" as being hardware components. In addition, the originally-filed specification discloses that the recording module may include hardware, software, or a combination thereof (emphasis added) *(see Paragraph [21])*. The claims are directed to functional descriptive material *per se*, and hence non-statutory.

The claims constitute computer programs representing computer listings *per se*. Such descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element, which defines structural and functional interrelationships between the computer program and the rest of the computer, that permits the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. **Claims 9, 11, and 12** are rejected under 35 U.S.C. 102(e) as being anticipated by **Kaler et al. (US 6,467,052)**.

As per **Claim 9**, Kaler et al. disclose:

- a first input that operates to receive information from a first device that is utilizing the modem to communicate with a second device through a communication network *(see Figure 2: 102; Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52."; Column 11: 20-27, "VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152.")*;

- a second input that operates to receive information from the second device through the communication network *(see Figure 2: 104; Column 11: 20-27, "... VSA 100 is a control and display station that comprises computer hardware and software. VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152.")*; and

- a recording module communicatively coupled to the first input and the second input that operates to cause input information arriving at one or both of the first input and the second input during real-time operation of the modem to be recorded for subsequent non-real-time analysis *(see Column 11: 23-29, "Each machine includes a Local Event Concentrator (LEC) 112,152. One LEC is provided per physical machine, although in a different implementation more could be provided if desired. VSA 100 activates an LEC when it wants that LEC to start collecting events ..." and 50-53, "In FIG. 7 three major portions of the process space of a machine are shown in the form of Applications 190, Operating System 191, and Additional Components 192." and 55-59, "Applications portion 190 has an IEC 193 associated with it; Operating Systems portion 191 has an IEC 195 associated with it; and Additional Components portion 192 has an IEC 197 associated with it.").*

As per **Claim 11**, the rejection of **Claim 9** is incorporated; and Kaler et al. further disclose:

- wherein the first device is a personal computer, and wherein the recording module operates to cause the input information arriving at the first input from the personal computer and arriving at the second input from the second device through the communication network, during real-time operation of the modem, to be recorded on a memory device of the personal computer *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52."; Column 12: 29-32, "Data collection begins in the IECs. An IEC is a subroutine that marshals the desired data into a special format and puts it in a shared memory buffer.").*

As per **Claim 12**, the rejection of **Claim 9** is incorporated; and Kaler et al. further disclose:

- wherein the recording module operates to cause input information arriving at the first input from the first device and arriving at the second input from the second device through the communication network to be communicated to a networked computer communicatively coupled to the modem over the communication network and recorded on a memory device of the networked computer *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52."; Column 11: 20-27, "VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152."; Column 12: 29-32, "Data collection begins in the IECs. An IEC is a subroutine that marshals the desired data into a special format and puts it in a shared memory buffer.").*

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. **Claims 13, 19, 20, and 22-46** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kaler et al. (US 6,467,052)**.

As per **Claim 13**, the rejection of **Claim 9** is incorporated; however, Kaler et al. do not disclose:

- wherein the modem comprises an ADSL modem.

Official Notice is taken that it is old and well known within the computing art to utilize an ADSL modem as the communication device. An ADSL modem is a widely used broadband modem used in home networks for establishing communications over a network. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the modem comprises an ADSL modem. The modification would be obvious because one of ordinary skill in the art would be motivated to analyze the performance of an ADSL modem.

As per **Claim 19**, Kaler et al. disclose:

- a memory comprising input information that was obtained from a communication device during real-time operation of the communication device *(see Column 8: 62-67 through Column 9: 1-5, "The system memory 22 may also be referred to as simply the memory, and it includes read-only memory (ROM) 24 and random-access memory (RAM) 25."; Column 11: 20-31, "VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152.")*; and

- a playback module communicatively coupled to the memory, the playback module comprising a model of the communication device that the playback module executes according to the input information in the memory *(see Figure 13; Column 32: 28-34, "FIG. 13 illustrates a screen print of an animated application model which the present invention generates to show the structure and activity of an application whose performance is being studied.")*.

However, Kaler et al. do not disclose:

- that the communication device is a modem.

Official Notice is taken that it is old and well known within the computing art to utilize a modem as the communication device. A modem is a widely used communication device in a computing system for establishing communications over a network. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a modem as the communication device. The modification would be obvious because one of ordinary skill in the art would be motivated to analyze the performance of a modem.

As per **Claim 20**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- information from a computer coupled to the modem *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52."; Column 11: 20-27, "VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152.")*; and

- information from a device with which the computer was communicating through a communication network using the modem *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52."; Column 11: 20-27, "VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152.")*.

As per **Claim 22**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- a debugging module communicatively coupled to the playback module that provides for controlling and observing the operation of the playback module *(see Column 22: 50-67 through Column 23: 1-11, "Like any debugging tool, the VSA should ensure that the debuggability of the system cannot become a security hole. Additionally, VSA debugging is a shared resource in a distributed environment. As such, it is important that proper security precautions be taken to prevent malicious users from obtaining this data.")*.

As per **Claim 23**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- wherein the model of the modem comprises a bit-exact software model of the modem that, when executed, produces results that are the same as an original modem that the bit-exact software model is modeling *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

As per **Claim 24**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- a computer communicatively coupled to the modem, and wherein the memory is a memory device of the computer *(see Column 8: 26-29, "... a personal computer (PC)." and 37-47, "The invention can also be practiced in distributed computing environments where tasks are performed by remote processing devices linked through a communications network.")*.

As per **Claim 25**, the rejection of **Claim 24** is incorporated; and Kaler et al. further disclose:

- wherein the computer comprises the playback module *(see Figure 13; Column 32: 28-34, "FIG. 13 illustrates a screen print of an animated application model which the present*

invention generates to show the structure and activity of an application whose performance is being studied.").

As per **Claim 26**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- a networked computer communicatively coupled to the modem over a computer network, and wherein the networked computer comprises the memory *(see Column 8: 37-47, "The invention can also be practiced in distributed computing environments where tasks are performed by remote processing devices linked through a communications network.").*

As per **Claim 27**, Kaler et al. disclose:

- operating the communication device in real-time to communicatively couple the first device and the second device, the communication device comprising a recording module *(see Figure 3: 199; Column 4: 42-44, "... displaying to the developer an animated model of the application as it is executing, either in real time or "post mortem".", Column 11: 20-31, "VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152."; Column 35: 40-41, "... so that in real time as an application is being analyzed ...")*;

- while operating the communication device in real-time, utilizing the recording module to cause the recording of input information input to at least the first and/or second inputs of the communication device *(see Column 11: 66-67 through Column 12: 1-9, "Events created by IECs 193, 195, 197 and DECs 189, 194, 196, 198 are collected by LEC 199. The LEC 199*

collects events generated by the IECs and DECs and sends these events to the user's control station, VSA 100, for analysis and display in a user-determined format."); and

- after operating the communication device in real-time, executing a model of the communication device, where the model is responsive to the recorded input information *(see Column 32: 28-34, "FIG. 13 illustrates a screen print of an animated application model which the present invention generates to show the structure and activity of an application whose performance is being studied.").*

However, Kaler et al. do not disclose:

- that the communication device is a modem.

Official Notice is taken that it is old and well known within the computing art to utilize a modem as the communication device. A modem is a widely used communication device in a computing system for establishing communications over a network. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a modem as the communication device. The modification would be obvious because one of ordinary skill in the art would be motivated to analyze the performance of a modem.

As per **Claim 28**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- the first device comprises a personal computer *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52.")*; and

- utilizing the recording module comprises utilizing the recording module to cause the recording of the input information input to at least the first and second inputs of the modem to a memory device of the personal computer *(see Column 12: 29-32, "Data collection begins in the IECs. An IEC is a subroutine that marshals the desired data into a special format and puts it in a shared memory buffer.")*.

As per **Claim 29**, the rejection of **Claim 28** is incorporated; and Kaler et al. further disclose:

- operating the modem comprises driving the modem as an operating system device driver on the personal computer *(see Column 10: 54-56, "... certain portions of the invention are provided within the Microsoft Windows® operating system.")*.

As per **Claim 30**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- the second device is a computer *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52.")*; and

- utilizing the recording module comprises utilizing the recording module to cause the recording of the input information to a memory device of the computer *(see Column 12: 29-32, "Data collection begins in the IECs. An IEC is a subroutine that marshals the desired data into a special format and puts it in a shared memory buffer.")*.

As per **Claim 31**, the rejection of **Claim 30** is incorporated; and Kaler et al. further disclose:

- wherein utilizing the recording module of the modem comprises executing a recording application program on the computer *(see Column 12: 29-32, "Data collection begins in the IECs. An IEC is a subroutine that marshals the desired data into a special format and puts it in a shared memory buffer.").*

As per **Claim 32**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- the first device is a personal computer *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52.")*; and

- utilizing the recording module to cause the recording of input information input to at least the first and/or second inputs of the modem comprises utilizing the recording module to cause the recording of input information *(see Figure 2: 100; Column 11: 20-27, "VSA 100 is coupled to one or more machines, e.g. machines 102, 104, 106, and 108. Each machine includes a Local Event Concentrator (LEC) 112, 152.")* comprising:

  - data input to the first input from the personal computer *(see Column 11: 66-67 through Column 12: 1-9, "Events created by IECs 193, 195, 197 and DECs 189, 194, 196, 198 are collected by LEC 199. The LEC 199 collects events generated by the IECs and DECs and sends these events to the user's control station, VSA 100, for analysis and display in a user-determined format.")*;

- commands input to a command input of the modem from the personal computer *(see Column 9: 34-36, "A user can enter commands and information into personal computer 20 through input devices such as a keyboard 40 and a pointing device 42.")*; and

- samples input to the second input from the second device through the communication network *(see Column 11: 66-67 through Column 12: 1-9, "Events created by IECs 193, 195, 197 and DECs 189, 194, 196, 198 are collected by LEC 199. The LEC 199 collects events generated by the IECs and DECs and sends these events to the user's control station, VSA 100, for analysis and display in a user-determined format.")*.

As per **Claim 33**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- wherein executing the model of the modem comprises executing a software model of the modem, and the method further comprises reading the recorded input information into the software model *(see Column 32: 35-40, "The VSA creates the application diagrams by closely examining the event data that is received. As explained above, events are correlated by the VSA to understand the flow of control. The data design described above makes it possible to understand which events need to be correlated and how they should be grouped and connected.")*.

As per **Claim 34**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- wherein executing the model of the modem comprises executing a bit-exact software model of the modem *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

As per **Claim 35**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- the model of the modem comprises a software component that is the same as a software component of the modem *(see Figure 13; Column 32: 28-34, "FIG. 13 illustrates a screen print of an animated application model which the present invention generates to show the structure and activity of an application whose performance is being studied.")*; and

- executing the model of the modem comprises executing the software component *(see Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

As per **Claim 36**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- the model of the modem comprises a hardware component that is the same as a hardware component of the modem *(see Figure 14; Column 33: 32-37, "... an animated application model, shown generally by reference number 410, includes a machine 404, which is shown coupled functionally to a machine 412, which in turn is coupled to a machine 411.")*; and

- executing the model of the modem comprises utilizing the hardware component *(see Column 33: 38-40, "A visual depiction of a first machine 404 can be "exploded" into its constituent processes, depicted by box 402.").*

As per **Claim 37**, the rejection of **Claim 27** is incorporated; and Kaler et al. further disclose:

- debugging operation of the modem by, at least in part, observing execution of the model with the recorded input information in non-real-time *(see Column 22: 50-67 through Column 23: 1-11, "Like any debugging tool, the VSA should ensure that the debuggability of the system cannot become a security hole. Additionally, VSA debugging is a shared resource in a distributed environment. As such, it is important that proper security precautions be taken to prevent malicious users from obtaining this data.").*

As per **Claim 38**, the rejection of **Claim 27** is incorporated; however, Kaler et al. do not disclose:

- wherein the modem comprises an ADSL modem.

Official Notice is taken that it is old and well known within the computing art to utilize an ADSL modem as the communication device. An ADSL modem is a widely used broadband modem used in home networks for establishing communications over a network. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the modem comprises an ADSL modem. The modification would be obvious because one of ordinary skill in the art would be motivated to analyze the performance of an ADSL modem.

As per **Claim 39**, the rejection of **Claim 11** is incorporated; and Kaler et al. further disclose:

- wherein the modem operates to cause the input information to be recorded on the memory device of the personal computer by, at least in part, being driven as an operating system (OS) device driver of the personal computer to write the input information directly to a hard drive of the personal computer *(see Column 10: 54-56, "... certain portions of the invention are provided within the Microsoft Windows® operating system.")*.

As per **Claim 40**, the rejection of **Claim 9** is incorporated; however, Kaler et al. do not disclose:

- wherein the recording module is integrated into an integrated circuit of the modem.

Official Notice is taken that it is old and well known within the computing art to integrate software into an integrated circuit. Integrated circuits are ubiquitous among electronic equipments, such as computers and cellular phones. Therefore, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to include wherein the recording module is integrated into an integrated circuit of the modem. The modification would be obvious because one of ordinary skill in the art would be motivated to achieve fast performance time.

As per **Claim 41**, the rejection of **Claim 9** is incorporated; and Kaler et al. further disclose:

- wherein the recording module operates to cause the input information arriving at the first input and the second input during real-time operation of the modem to be recorded in exactly the same sequence as the input information is received at the modem *(see Column 11: 23-29, "Each machine includes a Local Event Concentrator (LEC) 112,152. One LEC is provided per physical machine, although in a different implementation more could be provided if desired. VSA 100 activates an LEC when it wants that LEC to start collecting events ...").*

As per **Claim 42**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- wherein the model of the modem comprises a bit-exact software model of the modem that exactly mimics the real-time operation of the modem *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing*

conditions in the execution of the application. The diagram is kept up to date with what is really happening.").

As per **Claim 43**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- wherein the playback module comprises playback software that, when executed by a processor, causes the reading of the input information into the model of the modem *(see Column 34: 5-9, "Using the VCR paradigm to control the depiction of the application performance, the VSA can run through each of the events and correspondingly animate the application model shown in FIG. 13 or FIG. 14.").*

As per **Claim 44**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- wherein the model of the modem comprises a software component that is the same as a software component of the modem being modeled *(see Figure 13; Column 32: 28-34, "FIG. 13 illustrates a screen print of an animated application model which the present invention generates to show the structure and activity of an application whose performance is being studied.").*

As per **Claim 45**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- wherein the model of the modem comprises a hardware component that is the same as a hardware component of the modem being modeled *(see Figure 14; Column 33: 32-37, "... an animated application model, shown generally by reference number 410, includes a machine 404, which is shown coupled functionally to a machine 412, which in turn is coupled to a machine 411.").*

As per **Claim 46**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- wherein the playback module comprises playback software comprising a bit-exact model of the operation of the modem, such that any modem behaviors that occurred in real-time operation during the period of time over which the input information was obtained will recur during execution of the playback software in the non-real-time playback environment *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 33: 28-31, "... users can play and replay the application execution, stop, pause, reverse, speed up, slow down, and so forth."; Column 35: 36-47, "In addition, all of the above windows can be operated to display the application performance in real time as well as "post mortem". ... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.").*

13. **Claims 10 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kaler et al. (US 6,467,052)** in view of **Wakasugi (US 6,169,610)**.

As per **Claim 10**, the rejection of **Claim 9** is incorporated; and Kaler et al. further disclose:

- a command input that receives commands from the first device, and wherein the recording module further causes commands arriving at the command input during real-time operation of the modem to be recorded for subsequent non-real-time analysis *(see Column 11: 66-67 through Column 12: 1-9, "Events created by IECs 193, 195, 197 and DECs 189, 194, 196, 198 are collected by LEC 199. The LEC 199 collects events generated by the IECs and DECs and sends these events to the user's control station, VSA 100, for analysis and display in a user-determined format.")*.

However, Kaler et al. do not disclose:

- modem control commands.

Wakasugi discloses:

- modem control commands *(see Column 8: 1-7, "... the facsimile communication means 1d of the computer terminal 1 starts a facsimile transmission process by issuing a modem control command for controlling the modem 7 ...")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Wakasugi into the teaching of Kaler et al. to include modem control commands. The modification would be obvious because one of ordinary skill in the art would be motivated to control the modem *(see Wakasugi – Column 8: 1-7)*.

As per **Claim 21**, the rejection of **Claim 19** is incorporated; and Kaler et al. further disclose:

- wherein the input information comprises data sent from a computer to the modem *(see Column 10: 3-6, "When used in a WAN networking environment such as the Internet, PC 20 typically includes modem 54 or other means for establishing communications over network 52.").*

However, Kaler et al. do not disclose:

- modem control commands.

Wakasugi discloses:

- modem control commands *(see Column 8: 1-7, "... the facsimile communication means 1d of the computer terminal 1 starts a facsimile transmission process by issuing a modem control command for controlling the modem 7 ... ").*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Wakasugi into the teaching of Kaler et al. to include modem control commands. The modification would be obvious because one of ordinary skill in the art would be motivated to control the modem *(see Wakasugi – Column 8: 1-7).*

Response to Arguments

14. Applicant's arguments filed on July 10, 2007 have been fully considered, but they are not persuasive.

In the remarks, Applicant argues that:

a) First, the Applicants do not agree that one of skill in Kaler's distributed data processing system art would be motivated to analyze the performance of a modem. Secondly, even if, for the sake of argument only, such statement is true, the common utilization of a modem as a communication device does not cure the deficiencies of Kaler, nor does the statement that one might want to analyze the performance of a modem.

Examiner's response:

a) Examiner disagrees. The invention of Kaler et al. is directed towards analyzing the performance of a data processing system *(see Column 3: 50-56)*. As acknowledged by the Applicant, Kaler et al. disclose that a modem is a common network communication device that can be found in a computer system. Furthermore, Kaler et al. disclose that a performance monitoring software called "PerfMon" can provide an indication of the utilization of a computer's central processing unit (CPU) and memory unit, monitor and track the free space on a disk, monitor network usage, and so on *(see Column 2: 65-67 through Column 3: 1-6)*. CPU, memory, hard disk, and network interface card are also common devices that can be found in a computer system. Thus, knowing that a performance monitoring software can monitor these common devices, such as CPU and memory, one of ordinary skill in the art would be motivated to monitor the performance of a modem as well.

In the remarks, Applicant argues that:

b) In FIG. 1 of Kaler, the modem 54 appears to be connected to the PC 20. The Modem 54 also appears to be coupled to a remote computer 49 through a wide area network 52. However, the Applicants were unable to find any indication in Kaler of the modem 54 comprising "a recording module communicatively coupled to the first input and the second input that operate to cause input information arriving at one or both of the first input and the second input during real-time operation of the modem to be recorded for subsequent non-real-time analysis." Kaler's VSA is a visual studio analyzer, which clearly does not reside on a modem. Kaler's LEC is a Local Event Coordinator that resides in various computing systems. For example, at col. 3, line 66 to col. 4, line 2, Kaler states, "Insofar as the overall architecture and operation of the present invention is concerned, each machine where a portion of a distributed software application executes has at least one local event concentrator (LEC)." Again, the Applicants submit that there is no indication of such an LEC residing on a modem.

Examiner's response:

b) Examiner disagrees. Kaler et al. clearly disclose "a recording module communicatively coupled to the first input and the second input that operate to cause input information arriving at one or both of the first input and the second input during real- time operation of the modem to be recorded for subsequent non-real-time analysis *(see Column 11: 23-29, "Each machine includes a Local Event Concentrator (LEC) 112,152. One LEC is provided per physical machine, although in a different implementation more could be provided if desired. VSA 100 activates an LEC when it wants that LEC to start collecting events ..." and 50-53, "In FIG. 7 three major portions of the process space of a machine are shown in the form of Applications 190, Operating*

System 191, and Additional Components 192." and 55-59, "Applications portion 190 has an IEC 193 associated with it; Operating Systems portion 191 has an IEC 195 associated with it; and Additional Components portion 192 has an IEC 197 associated with it.")."

Note that there is one Local Event Concentrator (LEC) for each machine and the Additional Components portion of the LEC has an In-process Creator (IEC) associated with it. Kaler et al. further disclose that their invention has utility in analyzing the performance of computer hardware *(see Column 3: 58-65).* Thus, under the broadest and reasonable treatment, the IEC of the Additional Components portion is interpreted as the IEC creating events for a hardware component, such as a modem—which Kaler et al. clearly disclose.

Furthermore, the plain language of the claim does not suggest that the recording module has to reside on the modem. The claim does not expressly recite that the recording module is residing on the modem, but rather as being a functional component of the modem. Thus, there is no relationship indicated by the claim language that the modem and the recording module are part of the same physical unit.

In the remarks, Applicant argues that:

c) For example, the Applicants submit that the collection and communication of events by Kaler's IECs, DECs and/or LECs does not teach a "modem ... comprising a command input that receives modem control commands from the first device [that is utilizing the modem to communicate with a second device through a communication network]" nor does it teach the modem comprising a recording module that causes such modem control commands arriving at the command input of the modem during real-time operation of the modem to be recorded for

subsequent non-real-time analysis. There is no indication in Kaler of a modem (e.g., modem 54) having such an input or recording module.

Examiner's response:

c) Examiner has addressed Applicant's arguments in the Examiner's response (b) above.

In the remarks, Applicant argues that:

d) First, as explained previously, Kaler does not provide any indication of one of Kaler IECs residing on a modem, and the statement, whether true or not, that a modem is a common communication device that one might want to analyze does not cure this deficiency of Kale Secondly, even if, for the sake of argument only, Kaler did teach an IEC residing on a modem, there is no indication of an IEC receiving input information from a personal computer and causing such information (among other things) to be stored back on a memory device of the personal computer.

Examiner's response:

d) Examiner disagrees. Kaler et al. clearly disclose that an IEC receiving input information from a personal computer and causing such information (among other things) to be stored back on a memory device of the personal computer *(see Column 8: 26-29, "... the invention is described in the general context of computer-executable instructions, such as program modules, being executed by a computer, such as a personal computer (PC).";* Column 12: 29-32, *"Data*

collection begins in the IECs. An IEC is a subroutine that marshals the desired data into a special format and puts it in a shared memory buffer.").

In the remarks, Applicant argues that:

e) Since Kaler already discusses utilizing a modem for communication and such modem clearly does not meet the requirements of claim 19, the statement, whether true or not, that a modem is a common computer network communication device and that one might want to analyze its performance adds nothing to the disclosure of Kaler that helps Kaler's disclosure teach each of the playback environment requirements of claim 19.

Examiner's response:

e) Examiner has addressed Applicant's arguments in the Examiner's response (a) above.

In the remarks, Applicant argues that:

f) For example, the Applicants submit that Kaler, at most, shows the generation of a visual depiction of the operation of Kaler's distributed data processing system and not a model of a modem that is executed, as stated in claim 19. For example, at col. 4, lines 22-25, Kaler states, "The control station analyzes the events and visually displays the results of the analysis to the developer in a multi-windowed, time-synchronized display." Also for example, at col. 19, Kaler states, "Using this information the VSA is able to piece together a functional block diagram of the system as described below. ... This format makes is possible to draw a block diagram of the system, even though no one piece knows what the system should look like."

The Applicants were unable to find reference in Kaler to a playback module that executes a model, much less a model of a modem.

Examiner's response:

f) Examiner disagrees. Kaler et al. clearly disclose a model of a communication device *(see Figure 13; Column 32: 28-34, "FIG. 13 illustrates a screen print of an animated application model which the present invention generates to show the structure and activity of an application whose performance is being studied.")*. However, Kaler et al. do not disclose that the model is that of a modem. Hence, Claim 19 was rejected under 35 U.S.C. § 103(a) in the Final Rejection (mailed on 03/22/2007) as being obvious to one of ordinary skill in the art, since it is well known to analyze performance of hardware devices, such as a modem. See Examiner's response (a) above.

In the remarks, Applicant argues that:

g) Merely tracking the execution and flow of a portion of an application being monitored does not teach the execution of a model, much less the execution of a model of a modem, much less the execution of a bit-exact software model of the modem that, when executed, produces results that are the same as an original modem that the bit-exact software model is modeling. For example and without limitation, graphical blocks may be added, removed, and moved, and the interconnections between them may be dynamically changed to reflect changing conditions in the execution of an application by merely monitoring events corresponding to process and/or function calls and returns (e.g., as illustrated in the event fields of FIG. 6 of Kaler). Such a

relatively high level of application tracking is clearly not indicative of the execution of a bit-exact software model.

Examiner's response:

g) Examiner disagrees with Applicant's assertion that high level of application tracking is clearly not indicative of the execution of a bit-exact software model. As previously pointed out in the Final Rejection (mailed on 03/22/2007), Kaler et al. disclose that blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application and that the diagram is kept up to date with what is really happening. In other words, the model is being kept up-to-date (bit-exact) with the application as it is being executed. Thus, the resulting model is the same as the device it is modeling.

In the remarks, Applicant argues that:

h) For example and without limitation, the Applicants again submit that Kaler shows a modem (e.g., modem 54) that does not meet multiple elements of claim 27, and the statement, whether true or not, that a modem is a common computer communication device and that one might want to analyze the performance of a modem do not result in Kaler teaching the claimed method for analyzing real-time operation of a modem. Additionally, the Applicants again submit that Kaler, at most, shows the generation of a visual depiction of a portion of the operation of Kaler's distributed data processing system and not executing a model of a modem that is responsive to the recorded input, as stated in claim 27.

Examiner's response:

h) Examiner has addressed Applicant's arguments in the Examiner's response (f) above.

In the remarks, Applicant argues that:

i) First, as explained previously, Kaler does not provide any indication of one of Kaler's IECs residing on a modem, and the statement, whether true or not, that a modem is a common communication device that one might want to analyze does not cure this deficiency of Kaler. Secondly, even if, for the sake of argument only, Kaler did teach an IEC residing on a modem, there is no indication of an IEC receiving input information from a personal computer and causing such information (among other things) to be stored back on a memory device of the personal computer.

Examiner's response:

i) Examiner has addressed Applicant's arguments in the Examiner's response (d) above.

In the remarks, Applicant argues that:

j) The Applicants submit that Kaler shows no indication of a model of a modem comprising a software component that is the same as a software component of the modem, where executing the model of the modem comprises executing the software component. The statement, whether true or not, that modems are common for computer network communication and that one might want to analyze performance of a modem does not cure this deficiency of Kaler.

Examiner's response:

j) Examiner disagrees. Kaler et al. clearly disclose a model of a modem comprising a software component that is the same as a software component of the modem, where executing the model of the modem comprises executing the software component *(see Figure 13; Column 32: 28-34, "FIG. 13 illustrates a screen print of an animated application model which the present invention generates to show the structure and activity of an application whose performance is being studied."; Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*. See Examiner's response (a) above.

In the remarks, Applicant argues that:

k) The Applicants submit that Kaler shows no indication of a model of a modem comprising a hardware component that is the same as a hardware component of the modem, where executing the model of the modem comprises utilizing the hardware component. The statement, whether true or not, that modems are common for computer network communication and that one might want to analyze performance of a modem does not cure this deficiency of Kaler.

Examiner's response:

k) Examiner disagrees. Kaler et al. clearly disclose a model of a modem comprising a hardware component that is the same as a hardware component of the modem, where executing the model of the modem comprises utilizing the hardware component *(see Figure 14; Column 33: 32-37, "... an animated application model, shown generally by reference number 410, includes a machine 404, which is shown coupled functionally to a machine 412, which in turn is coupled to a machine 411." and "A visual depiction of a first machine 404 can be "exploded" into its constituent processes, depicted by box 402.")*. See Examiner's response (a) above.

Note that Applicant did not traverse the Examiner's assertion of Official Notice with regard to Claims 13 and 38. Therefore, the "old and well known within the computing art" statement is taken to be admitted prior art because Applicant has failed to traverse the Examiner's assertion of Official Notice (see MPEP § 2144.03).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Qing Chen whose telephone number is 571-270-1071. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 4:00 PM. The Examiner can also be reached on alternate Fridays.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wei Zhen, can be reached on 571-272-3708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WEI ZHEN
SUPERVISORY PATENT EXAMINER

QC / ac
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